Guntermann & Drunck GmbH

KVM Expertise

Leading the way in digital KVM

Broadcast
Post Production
Mobile Radio Broadcast

KVM Extenders | Switches | Matrix Switches

Leading the way in digital KVM

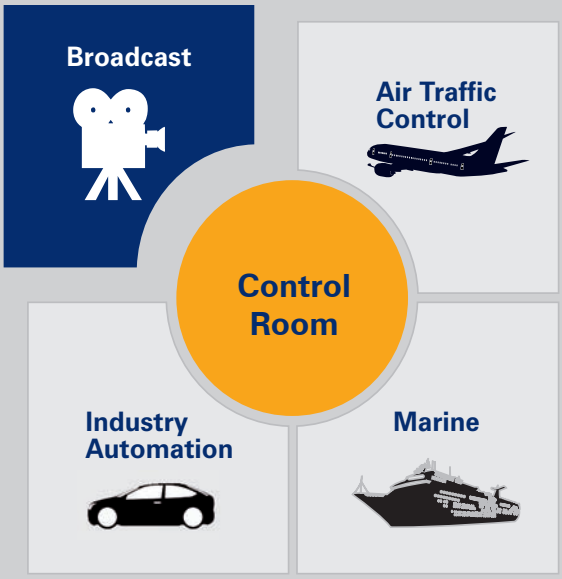
Guntermann & Drunck is regarded as one of the leading manufacturers of digital and analogue KVM products for control rooms in broadcast, air traffic management, automation, marine and other sectors such as telecommunications and finances.

With a broad portfolio of powerful products to extend, switch and distribute keyboard, video and mouse signals and many years of experience when it comes to installing systems in broadcast stations, post production studios, OB vans or in mobile radio broadcasts, G&D provides users from all applications with maximum customer benefits and real added value.

G&D is considered a top performer regarding:

- Failure safety, redundancies and preventive monitoring
- Reliable 24/7 operation especially during live broadcasts
- Highest quality requirements regarding long operating times and life of products for all broadcast applications
- Broad range of helpful functions that provide even more flexibility and usability

G&D offers the largest KVM product portfolio at the market. All G&D products as well as their variants are compatible with each other and can be combined even in largest applications.



G&D KVM solutions optimise your IT equipment and increase productivity for man and machine – both can therefore work under best possible conditions.

If you need the best possible KVM equipment for your specific application and a completely worry-free solution, then ask for G&D – from professionals to professionals.

Intelligent solutions

KVM Extenders

- DL-Vision
- FIBREVision
- DVIVision

KVM Switches

- DL-MUX
- DVIMUX
- DisplayPortMUX

KVM Matrixswitches

- ControlCenter-Digital
- DVICenter
- CATCenter

Monitoring & SNMP

- Preventive Monitoring
- SNMP trap & agent
- DevCon-Center

Functionality

- CrossDisplay-Switching
- Channel grouping
- Stacking function
- Screen-Freeze function

KVM expertise for broadcast applications

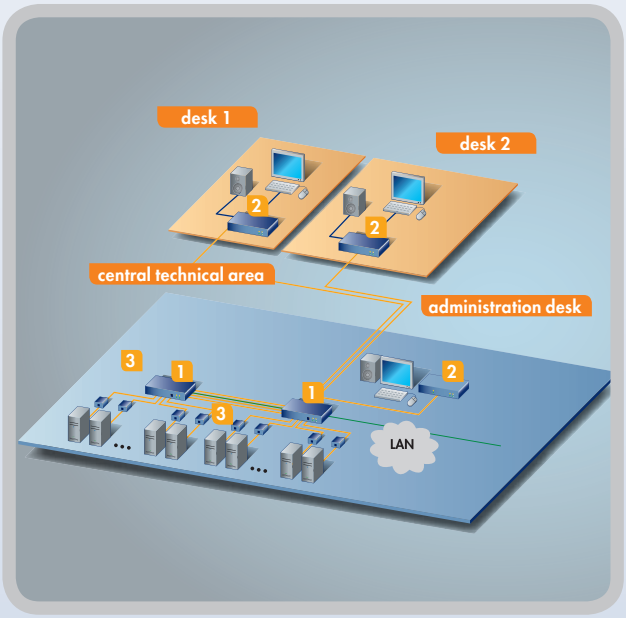
KVM at studio workplaces ► Remove computer equipment from the studio

KVM products are the backbone of computer technology in broadcast applications. Requirements such as desks without computers, a quiet working environment and permanent access to the computers must be guaranteed.

G&D's KVM products enable users to remove computers from user workplace to a central equipment area. The producers are still able to fully access those computers from their studios in real-time and with full performance.

KVM allows you to use your technical equipment more flexibly, offering stability in 24/7 operations and provides reliability – in studios, post productions and animation studios. The peripherals-saving solution reduces the noise level in the studio and avoids unnecessary heat emissions.

How KVM works in studios



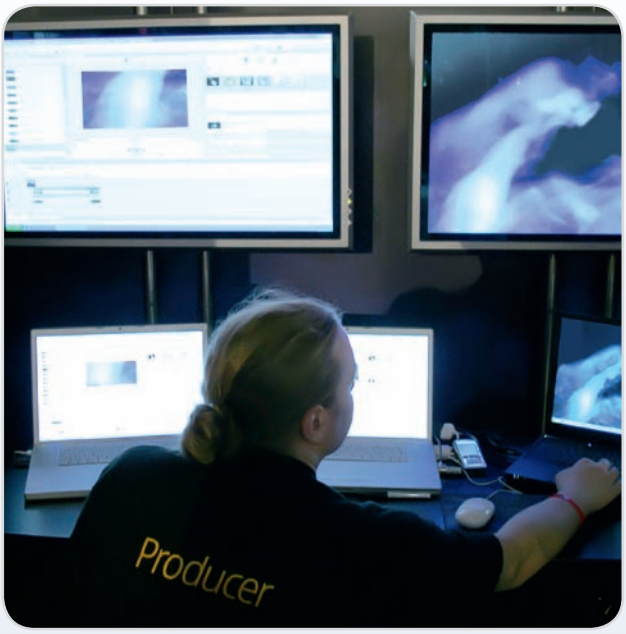
1 ControlCenter-Digital
2 DVI-CON
3 DVI-CPU

Thanks to KVM products computers can be removed from workplaces into central equipment areas, completely separated from the production-level users. By employing KVM matrix switches, e.g. the ControlCenter-Digital, it is possible to operate several hundreds of computers via several hundreds simultaneous workstations.

The computers are housed in the computer room from where they can be easily operated over a separate administration console. A dedicated CAT-x or fibre optic connection integrates the productive workplaces into the operational concept. Now users work on their computers without realising any latency or loss of quality.

Each user can access every computer remotely. Flexible operting concepts create ideal environmental conditions for both users and computers. A broad range of switchable signals guarantees efficient work for the users.

KVM in the post production ▶ Creating computer-free offices

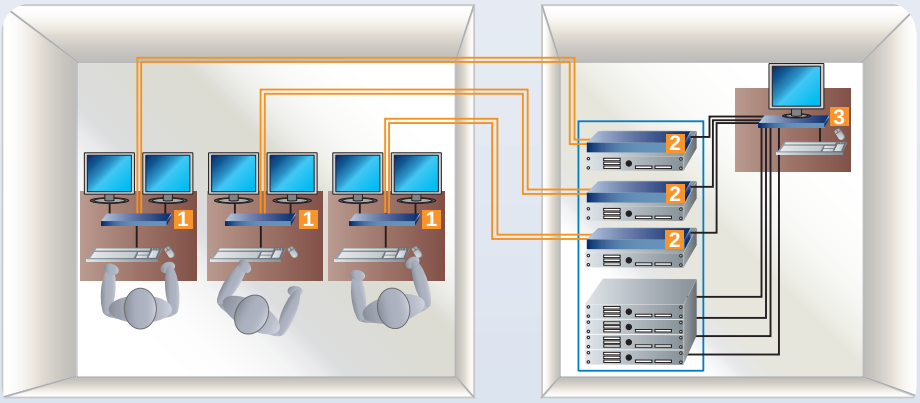


High-performance computers for editing images require powerful processors causing noise and heat emissions. However, the producer and the whole creative team need best possible working conditions to focuse on their creative tasks. Additionally, the creative heads of such departments need multiple screens and a broad variety of transmittable signals.

To keep any emissions away from the staff, the computers can be moved out of the offices into a dedicated technical room using G&D KVM Extenders. Some producers need more than one computer and have to access them from the distance. By implementing a KVM Switch even this is easy and efficient to do.

This way, the working conditions for employees and computers are optimised. This increases productivity and concentration and provides optimal video and sound cutting results.

How KVM works in post production



1 DVIVision-MC2-CON 2 DVIVision-MC2-CPU 3 KVM Switch DVIMUX8

The post production sector requires high performance and reliable equipment at any time. Producers have to completely rely on their computers in such a way as to enable them to conclude their sophisticated video und sound cutting tasks.

In this application the computers were removed into a separate technical room.

Thanks to KVM extenders (e.g. DVIVIsion-MC2) the remote users in the post-production area can work on their computers without any latency as if computers are still at the console. The KVM extender DVIVision-MC2 consists of a computer module (transmitter) and user module (receiver). The multi-channel variant (MC2) is also able to display two video channels at the console. KVM extenders are available as variants transmitting one, two, three or four video channels.

The local administration console in the computer room uses a KVM switch (e.g. DVIMUX8) to administrate and configure all computers simultaneously.

With the **broadcast function** administrators can transmit keyboard and mouse signals to all eight channels. Now they can configure and operate all computers at the same time.

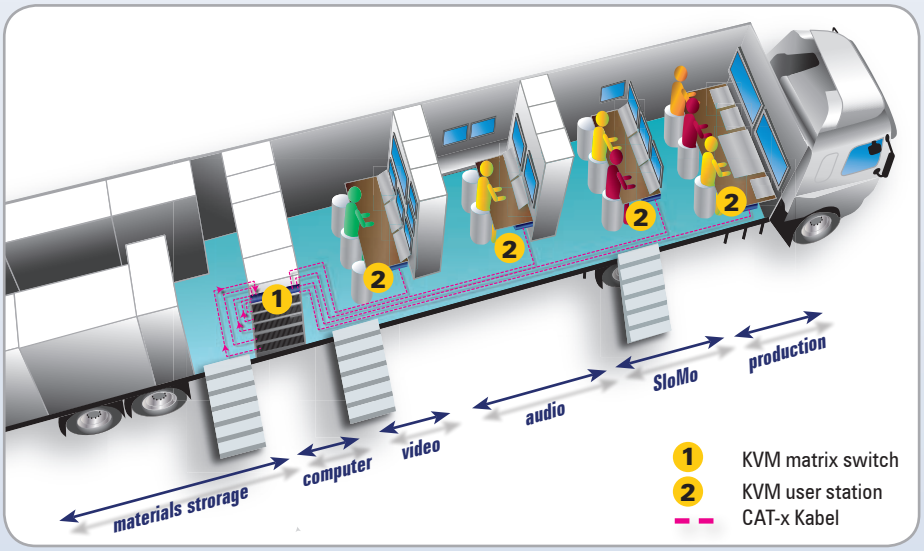
KVM expertise for broadcast applications

OB Vans ▶ Access technology from everywhere

Whether it's the director's desk or audio desk or Slo-Mo – despite the reduced space in OB vans, each console needs to have simultaneous access to the central computer technology stored in the server rack. Switching between computers is carried out through a KVM matrix switch (e.g. DVICenter DP64) to which multiple computers are connected. The flexible operation concept of the OB van is therefore supported in an optimal way.

Further advantages are space savings in the different working areas as well as improving the working conditions for the staff regarding space, noise and emissions. At the same time, all users can access all computers without having to change bays. Several staff members are therefore able to share and perform any monitoring processes at the same time.

How KVM works in OB vans



OB trucks are equipped with the most sophisticated HD technology for live broadcasts and events. Using such small spaces efficiently is therefore essential. All workstations of production, slo-mo, audio and video areas access a computer pool in a server rack placed in the back of the truck. Here, any computers are connected to a KVM matrix switch, e.g. DVICenter DP32 from Guntermann & Drunck. Computers are connected over their standard interfaces (keyboard, video, mouse and audio, USB and RS232) via according modules. CAT cables connect these modules to the matrix switch and to the user module (DVI-CON) placed at the user's desk.

The solution optimises the existing working conditions by saving valuable space and reducing noise and emissions.

With the help of a KVM matrix switch, all computers could be removed from desks and were stored in the technology area. Users, however, can still access all computers remotely in real time – from each console within the truck. Multi monitor workstations are operated with only one keyboard and one mouse thus reducing the number of required peripherals. To switch between and access computers to carry out tasks, technicians either use the on-screen-display or simply press a button.

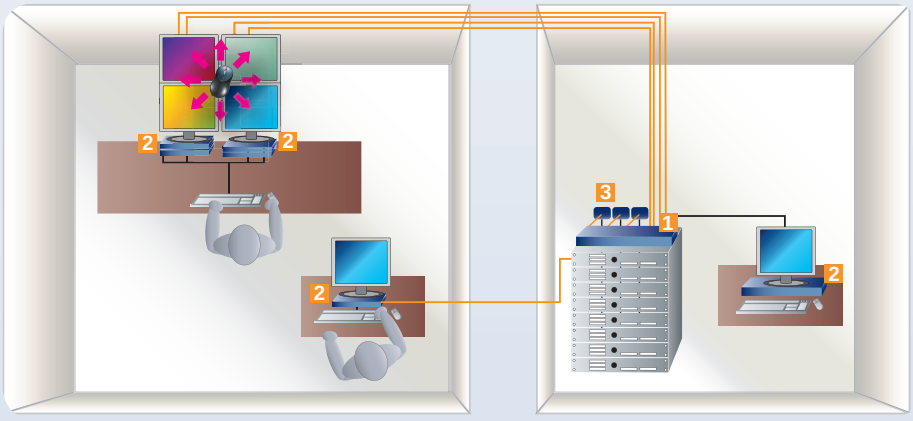
KVM in mobile radio broadcast ▶ Enable quick and flexible installation

One of the greatest challenges of outside radio broadcasting is the compromise between ever-changing, cramped confines and an effective working environment for broadcast technicians.

The high requirements to perational stability and reliability must be considered as well. If a radio broadcast is on-air, the supervising technician in the Master Control Room has to be able to access the relevant computer systems immediately - for operation as well as for urgent administrative tasks.

The computers are housed in a dedicated container and can be centrally operated from the MCR and the equipment container without disturbing the production.

How KVM works in mobile radio broadcast



1 KVM matrix switch DVICenter
2 User module DVI-CON
3 Computer connection module DVI-CPU

Usually, a mobile radio studio consists of a technology container and a master control container, which uses KVM technology to access the remote computers.
As a core operation unit, the master control room can centrally operate all the audio input computers, the control computer for the audio matrix as well as other servers in the equipment container. Here the computers are connected to a KVM matrix switch DVICenter. At the remote console, users have full access to all computers conencted to the matrix. Additionally, the technicians at the local console (equipment container) can also access all computers and administrate them if transmission is interrupted.

At the remote console several receiver devices (DVI-CON) can be combined into one operation desk (TradeSwitch function). Thanks to the innovative CrossDisplay-Switching, the mouse acts as if on a "virtual desktop" and can be moved seamlessly across the connected displays. Moving the cursor from the active to another display, the keyboard-mouse focus automatically switches to the connected computer. Now the master operator can create a multi-monitor console which only requires one mouse and one keyboard to operate all computers. The mouse becomes the ultimate intuitive switching tool while the staff can always keep an overview of all audio sources displayed on the multi-image screen.
By employing KVM equipment, operators are no longer affected by noise or heat emitting from computers but can remain focused on their tasks.

Leading the way in digital KVM

The Products

KVM Extenders

DVI and VGA KVM extenders enable you to operate your computers over distances up to 10,000 m whilst maintaining real-time performance. The systems consist of a transmitter and a receiver module. A full local console at the transmitter module placed in the server room makes it easy for the IT staff to maintain the system. KVM extenders transmit the following computer signals:

- DVI (single-link & dual-link) or VGA video
- Keyboard/mouse (PS/2 & USB)
- USB 1.1, USB 2.0 transparent
- Audio & RS232
- Remote power switching sequences

Highlights:

- Distances up to10,000 m
- Real-time performance
- Up to four video channals
- Predictive maintenance via SNMP und Monitoring

KVM Switches

DVI, VGA and DisplayPort KVM switches are designed to operate 2 to 64 computers via one console consisting of keyboard, monitor and mouse. Our DVI switches also transmit VGA video signals and enable users to work in mixed mode. The stand-alone devices switch the following computer signals:

- single- and dual-link DVI, DisplayPort 1.1. and VGA
- keyboard/mouse PS/2 and USB
- transparent USB 2.0
- audio

Highlights:

- Mixed operation of DVI/VGA on input and output side
- DisplayPort 1.1. also switchable
- available as variants transmitting 1, 2, 3, or 4 video channels
- work in a user-friendly and ergonomic environment and have less peripherals at your desk

KVM Matrix Switches

With KVM matrix switches you can access multiple computers over multiple user consoles simultaneously. They consist of computer modules, central modules and user modules. G&D products allow flexible operation of large, distributed IT installations even with multiple user consoles connected. Depending on the requirements, we offer KVM matrix switches with modular or compact design. Our KVM matrix switches transmit the following signals:

- single-link DVI & VGA
- DisplayPort 1.1. (on the input side)
- keyboard/mouse PS/2 and USB
- audio
- RS232 and transparent USB 2.0

Highlights:

- transmission range up to 10,000 m by fiber optics
- available as variants transmitting multi-channel video
- Example DP64: Up to 4,738 computers when operated by 6 consoles
- remote access (local and over IP)
- flexible control of large and distributed IT installations
- Push-Get function to show screen contents on other monitors or large screen projections
- CrossDisplay-Switching enables users to switch between channels by moving the mouse

KVM Add-Ons

Add-on products increase the productivity and efficiency of computer applications. G&D provides the following add-on products:

- TFT RackConsoles for single-link DVI and VGA; 17" display requires only 1 U
- Programmable input devices for optimised device control
- 3G-SDI-DVI-Converter transforms SD, HD-SDI and 3G signals to single-link DVI signals
- Rack mounting solutions for horizontal or vertical rack or under-desk mounting enable tidy and space saving installations
- appliances for central, proactive monitoring and central configuration for network-capable G&D devices
- External devices for switching a G&D switch by pressing a button (OperatorPanel)

KVM products for broadcast applications

KVM Extenders for CAT cables or fibre optics

DL-Vision

Digital dual link video via fibre optics

- ► Range up to 10,000 m, with USB option up to 2,000 m
- ► Resolutions up to 2560 x 1600 @ 60 Hz including 2k-resolution (2048 x 2048 @ 60 Hz)
- ► DL-Vision-MC2 also supports 4k-resolution
- ► For up to 2 video channels (4 channels in preparation)
- ► Comprehensive proactive diagnostics by monitoring and SNMP
- ► 300 MHz pixel rate and 24 bits colour depth for crystal clear images
- ► Redundant power supply
- ► 2 network ports
- ► Screen freeze function with timer
- ► E-DDC support
- ► Ident-LED for locating device in large installations

The DL-Vision (M/S) system extends the signals:

- ► Keyboard/mouse
- ► Dual-link DVI video
- ► Audio
- ► RS232
- ► USB 2.0

FIBREVision

Digital single link video via fibre optics

- ► Range up to 10,000 m, with USB option up to 2,000 m
- ► Resolutions up to 1920 x 1200 @ 60 Hz
- ► For up to 4 video channels
- ► E-DDC support
- ► Remote power switching
- ► Redundant power supply
- ► Screen freeze function

The FIBREVision system extends the signals:

- ► Keyboard/mouse
- ► Single-link DVI video
- ► Audio
- ► RS232
- ► USB 1.1 & USB 2.0

DVIVision

Digital single link video via CAT cable

- ► Transmissions up to 140 meters
- ► Resolutions up to 1920 x 1200 @ 60 Hz
- ► For up to 4 video channels
- ► E-DDC support
- ► Suppors DVI-FiberLink (for bridging horizontal fiber optics cabling)
- ► Remote power switching
- ► Redundant power supply
- ► Screen freeze function

The DVIVision system extends the signals:

- ► Keyboard/mouse
- ► Single-link DVI video
- ► Audio
- ► RS232
- ► USB 1.1 or USB 2.0

KVM Switches to operate multiple computers via one console

The DL-MUX switches the following signals:

- Keyboard/mouse
- Dual-link DVI & VGA video
- Audio
- USB 2.0

DL-MUX4

For up to 4 computers via one console

- Resolutions DVI up to 2560 x 1600 @ 60 Hz
  VGA up to 1920 x 1440 @ 75 Hz
  including 2k resolution (2048 x 2048 @ 60 Hz)
- For up to 4 video channels
- 2 network ports
- Including monitoring and reporting function
- Channel switching via hotkey, SNMP, buttons, external serial device or Control-API
- Web interface to configure and display monitoring values remotely
- Supports communication with the central appliance DevCon-Center for monitoring and configuration
- Ident-LED to locate devices in large installations

The DVIMUX switches the following signals:

- Keyboard/mouse (USB & PS/2)
- Single-link DVI & VGA video
- Audio
- USB 2.0

DVIMUX

For up to 8 computers with up to quad video

- Mixed operation of analogue and digital video
- Channel switching via hotkey, device button or external serial device
- Bidirectional audio with USB variant
- DVIMUX8 with on-screen-display and broadcast function (configure or control up to 8 PC´s simultaneously over one console)

The DisplayPortMUX switches the following signals:

- Keyboard/mouse
- DisplayPort 1.1.
- Audio
- USB 2.0 transparent

DisplayPortMUX

For up to 4 computers with single video

- Mixed operation of DisplayPort and DVI on output side
- Colour mode DisplayPort up to 48bit
- Colour mode DVI up to 24 bit
- Data transfer rate up to 10.8 Gbit
- Switching via push button, keyboard hotkeys or serial device

KVM products for broadcast applications

Modular KVM Matrix Switches to operate multiple computers via multiple consoles

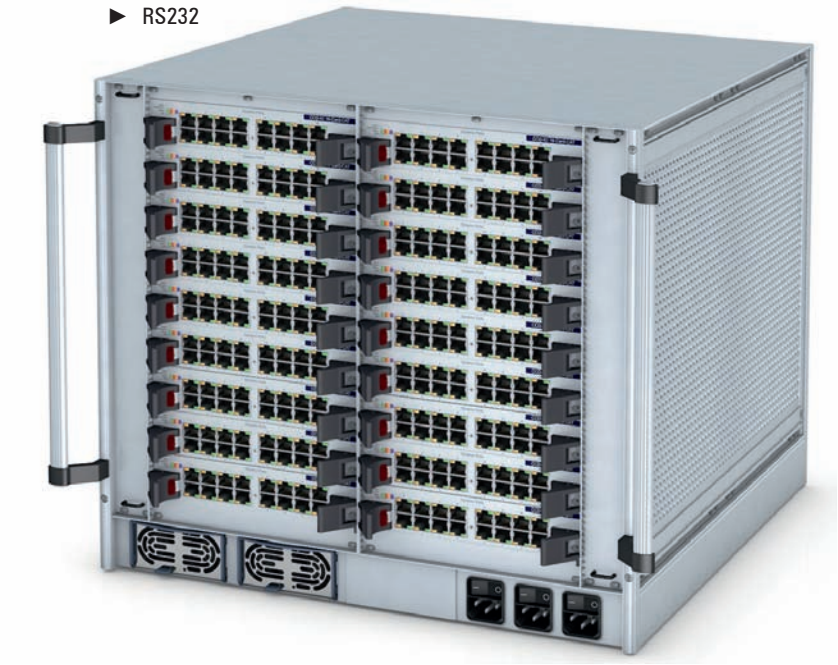
ControlCenter-Digital

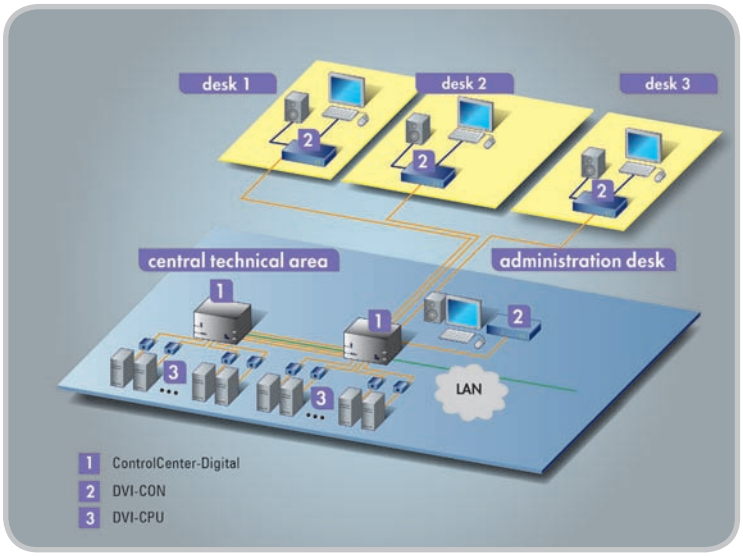
Modular Matrix Switch to operate multiple computers via multiple consoles

- Modular setup: Controller and switch card, I/O CAT- & I/O Fibre cards, fan boards and the power supplies are modular and can be replaced
- Modularity: the system can be adapted or expanded during operation
- Supports CAT cable and fiber optics (even combined)
- System control logic on a separate controller card and can be easily replaced / switch card can be replaced as well
- More flexibility with DynamicPort technology: 288 dynamic ports that can be freely configured for either user or computer connection
- Resolutions for a brilliant video quality: Single-Link DVI up to 1920 x 1200 @ 60 Hz (incl. 1920 x 1080 Full-HD)
- Integration of VGA & DisplayPort video sources
- Full implementation of USB2.0 transmission/switching
- Automatic device detection
- Multi monitor workstations incl. CrossDisplay-Switching
- Innovative CrossDisplay-Switching enables users to switch between channels by using the mouse
- Expansion of switchable signals either through channel grouping or stacking
- Cascadable to up to 3 levels
- DVICenter can be fully integrated into the system as a slave
- Compatible with all DVICenter devices
- Operation and configuration via web interface and OSD
- Monitoring & SNMP
- Two network interfaces (web interface, updates)
- Three redundant power packs that can be changed during operation
- Maximum flexibility (number of ports, transmission media, supported signals and high usability)
- Expansion stages for largest applications
- Text-based media control over TCP/IP e.g. AMX, Crestron, VSM and KSC Commander
- Operation via touchscreen possible

The ControlCenter-Digital switches the following signals:

- Keyboard/mouse (USB & PS/2)
- Single-Link DVI video
- Audio bidirectional
- USB 2.0 transparent
- RS232





Application scheme

Compact KVM Matrix Switches to operate multiple computers via multiple consoles

The DVICenter system switches the following signals:

- Keyboard/mouse
- Single-link DVI video
- Audio bidirectional
- RS232 & USB 2.0 transparent

Use all common video signals in one matrix switch

The CATCenter NEO system switches the following signals:

- VGA video
- Keyboard/mouse
- Audio

DVICenter

Operating multiple computers via multiple simultaneous consoles

- Up to 560 m system range via CAT cable when cascaded
- 16, 32 or 64 dynamic ports, which can be freely configured for either user or computer connection
- Crystal clear images
- Resolution up to 1920 x 1200 @ 60 Hz and 1280 x 1024 @ 85 Hz
- Integration of VGA and DisplayPort video sources
- Operation and configuration via web interface and OSD
- Monitoring function, SNMP support
- Text-based media control over TCP/IP e.g. AMX Crestron, VSM and KSC Commander
- Redundant power supply
- Up to 10,000 m using fibre optics (DVI-FibreLink)

DVICenter Components

Even more possibilities

- DVI-DP-CPU: Computer module for integration of DisplayPort into the DVICenter
- DVI-CPU-MC2: integrates multi-channel video computer into the matrix
- DVI-CPU-MC2-UC: dual module for connecting multi-channel computer to two DVICenter clusters
- DVI-CON-MC2 & DVI-CON-MC4: Multi-channel user modules for integration of multi-monitor consoles
- DVI-VGA-CPU integrates VGA video sources into the matrix switch

CATCenter NEO

Analogue video via CAT cable

- Transmissions up to 300 meters
- Resolutions up to 1920 x 1440 @ 75 Hz
- Operation and configuration via OSD, web interface and IP-client
- System range up to 10,000 m via fiber optics
- Offers module to access computers over IP
- Monitoring function, SNMP support
- Redundant power supply
- Integration of DVI computers possible

KVM products for broadcast applications

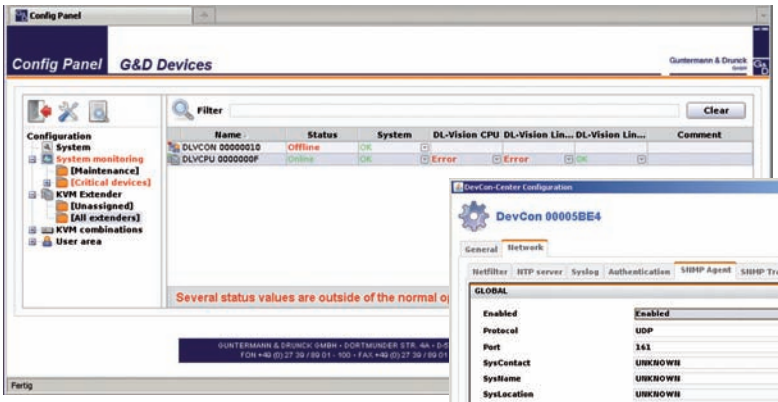
KVM Add-ons: Configuration & Status Monitoring

Preventive device monitoring

High operational safety and reliability are essential for G&D devices. In order to enhance these well-established attributes, our latest products are provided with two network ports which offer the following possibilities:

- ► Device configuration
- ► Query of system status
- ► Transmit these information via SNMP and as Syslog message

You can adjust these settings either in the web interface of each device or monitor and configure the devices centrally in the DevCon-Center. The DevCon-Center permanently contacts the connected devices and receives their status information.



Web interface of DL-Vision with monitoring values

Network settings for the SNMP agent

DevCon-Center

- ► Monitoring, reporting and requesting
- ► Compatible with G&D network devices
- ► Independent reporting or query of web interface
- ► Supports SNMP (Trap + Agent) and Syslog
- ► Redundant power supply
- ► Two network ports
- ► Critical operating conditions can be recognised in advance and the administrator can react accordingly
- ► Runs with every SNMP Management Software e.g. HP OpenView, Tivoli etc.

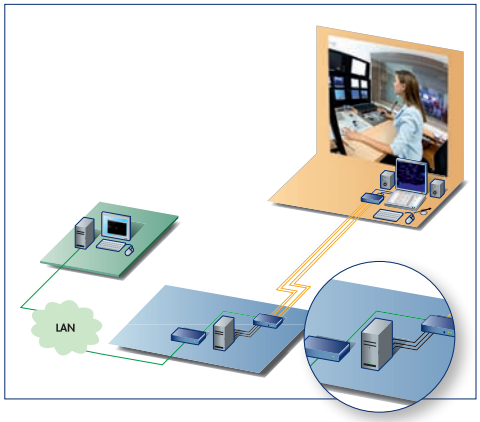
SNMP trap & agent

Monitoring function for the predictive maintenance

- ► Defined conditions and exceeded thresholds are stored in the web interface and can be viewed anytime
- ► SNMP management software receives automatically any status event sent by G&D devices
- ► Integrated SNMP-GET function enables you to query, for example, the device temperature and to provide statistics on top values as well as to recognise critical values in advance
- ► SNMP-SET has active impact on a G&D product (for example when changing channels at a KVM Switch)

Following products provide the monitoring function:

DL-Vision
DL-MUX4
ControlCenter-Digital
DVICenter
CATCenter NEO
CompactCenter X2



KVM Add-ons: Variety and Functionality

Your special advantages:

- ► Easy switching by using the mouse, in addition to switching between channels using hotkeys or the OSD
- ► Fast and seamless operation across the connected displays
- ► Special LED indicates active monitor

Channel grouping and multi-monitor workstations
The ControlCenter-Digital and the DVICenter also support multi-monitor workstations for computers with several video outputs. Here, multiple channels can easily be combined as **channel groups**.

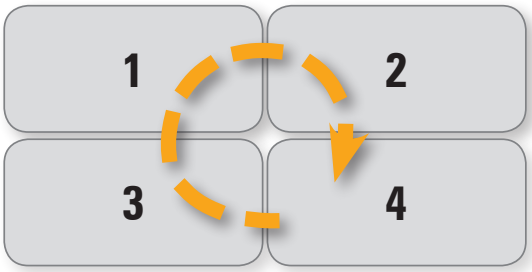


Illustration of the channel-grouping function for multi-monitor workstations.

FIBREVison-CON and WACOM® display with active SCREEN FREEZE

CrossDisplay-Switching

With the innovative CrossDisplay-Switching as part of the TS function (DVICenter and ControlCenter-Digital), users can use the mouse to easily switch between channels.

The mouse acts as if on a "virtual desktop" and can be moved seamlessly across the connected displays. Moving the cursor from the active to another display, the keyboard-mouse focus automatically switches to the connected computer. Now users can create a multi-monitor console and need only one keyboard and one mouse to operate all computers. The mouse becomes the ultimate intuitive switching tool.

Channel grouping

As always, you can administrate all functions in the in the web interface of your ControlCenter-Digital or DVICenter. In addition to multiple screens, you can include other signals in these groups. The system also transmits and switches transparent USB2.0 signals as well as RS232.

Stacking function.

The stacking function enhances the system's flexibility even further. The feature increases the number of ports by combining up to ten DVICenter or ControlCenter-Digital via bus port. The ports of the stacked switches are switched parallel to the master system. Now you can create multi-monitor workstations and assign consoles with USB or RS232 channels.

Screen-Freeze Function

If the display loses the video signal due to a broken connection or a problem with the computer's graphics card, the Screen-Freeze function „freezes" the image last displayed on the monitor. Users are provided with the information last received before switching to a redundant system. KVM extenders of the DL-Vision, FIBREVision and DVIVision series provide the screen-freeze function.

In case of an interruption of the video signal it is essential that the user's screen does not turn blank, but displays the last frame until all interferences are solved. This status is highlighted by a red semi-transparent frame. (DL-Vision)

Guntermann & Drunck GmbH

Leading the way in digital KVM

From professionals to professionals:

Trust in our professional solutions - from planning through to aftersales support.

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